on to the main text of this chapter.

Section 10 provides additional guidance for sites where groundwater has already been impacted by a vadose-zone release. The final section of the chapter briefly reviews the intent of Tier 3 risk assessments and introduces a Tier 3, direct-exposure spreadsheet (DETIER3) available from DOH for public use. Note that for use in this report, the term "soil" refers to any unlithified, subsurface, solid media.

DOH TIERED APPROACH TO SITE EVALUATIONS AND REMEDIAL ACTIONS

In the past, DOH has allowed the use of site-specific risk assessments ("Tier 3") as an alternative to use of default, generally conservative, soil and groundwater action levels ("Tier 1"). The high costs and general lengthy review time typical associated with formal risk assessments, however, made the use of this option prohibitive at all but the largest release sites or sites where potential remedial costs outweighed risk assessment costs.

In response to this dilemma, DOH has refined its tiered approach to site remedial actions to include a conservative but more flexible and cost-efficient method of setting site-specific soil action levels - Tier 2. The overall concept of the tiered approach to site evaluations is detailed in the ASTM document entitled "Emergency Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites (ASTM, 1994)." (Note that DOH has chosen not to use the example quantitative models presented in the ASTM document.)

In Tier 1, a facility refers to conservative, default ("generic") soil action levels provided by the DOH that can be used at any impacted site (refer to Chapter 1). The Tier 1 action levels were generated by incorporating default, conservative impacted-site and exposure assumptions into standardized, quantitative groundwater-protection and direct-exposure models used by the DOH.

In Tier 2, the subject of this chapter, a facility is permitted to substitute actual site data into the same models used to generate Tier 1 SALs as well as additional, DOH-approved models and evaluate groundwater-protection and direct-exposure concerns on a controlled, but more site-specific basis.

In Tier 3, a facility employs alternative groundwater-impact models, direct-exposure models, and/or input parameter assumptions to evaluate an impacted site and supports all input data with a thorough and rigorous risk assessment. Procedures that should be followed for the preparation of Tier 3 risk assessments are briefly outlined at the end of this chapter and more fully discussed in DOH technical guidance manuals (HIDOH,1992).

Impacted sites with contaminant concentrations in excess Tier 1 soil or groundwater action levels required to initiate followup "action," whether this be remediation to default action levels (Tier 1), limited refinement of soil action levels to reflect more site-specific data (Tier 2), or full refinement of soil action levels based on a detailed, site-specific risk